

REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-20 are presently active in this case. The present Amendment amends Claims 1, 2, 4-6, and 8-10 and adds Claims 11-20.

In the outstanding Office Action, Claims 1, 4, and 10 were rejected under 35 U.S.C. § 102(b) as being anticipated by Esval et al. (U.S. Patent No. 2,487,793) or Atwood et al. (U.S. Patent No. 2,985,409). Claims 5, 8, and 9 were rejected under 35 U.S.C. § 102(b) as being anticipated by Chakravarty et al. (U.S. Patent No. 5,072,893). Claims 2 and 3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Esval et al. patent or the Atwood et al. patent. Claims 6 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Chakravarty et al. patent.

In response to the rejections of Claims 1, 4, and 10 under 35 U.S.C. § 102(b), Applicant respectfully requests reconsideration of these rejections and traverses the rejections as discussed next.

Briefly recapitulating, Applicant's invention, as recited in Claim 1, relates to a method for controlling an aircraft, including the steps of: receiving first vertical acceleration data related to a vertical acceleration of a front vibration antinode of the aircraft; receiving second vertical acceleration data related to a vertical acceleration of a rear vibration antinode of the aircraft; receiving pitch rate data related to a pitch rate of a center vibration node of the aircraft; and computing a pitch command based on the first and second vertical acceleration data and on said pitch rate data. Claim 1 has been amended to recite a front/rear "vibration antinode" instead of front/rear "portion," to recite a center "vibration node" instead of a center "portion," and to recite "computing" rather than "generating." These features find

non-limiting support in the disclosure as originally filed.¹ Claim 4 has been amended accordingly. Claim 10 has been amended to depend from Claim 5 and not from Claim 10. Accordingly, Claim 10 will be treated below along with Claim 5.

Turning now to the applied prior art, the Esval et al. patent discloses a control system to operate the elevator of an aircraft to control the movement of the craft about its pitch axis. However, the Esval et al. patent fails to teach locating any element at a “vibration antinode” or at a “vibration node.” In the Esval et al. patent, there is “a pair of accelerators whose respective housings are indicated at 58 and 59” which “may be fixedly mounted in the craft at approximately equal radial distances.”² This does not teach locating these instruments at a vibration antinode. Further, the location of the gyrometer is unspecified and therefore not taught to be at a vibration node. Applicant also note that the pitch command in the Esval et al. patent is not computed, but the result of a complex electro-mechanical “motor system” described in Fig. 8 of the Esval et al. patent. Of course, reliable computers compact enough to constitute aircraft on-board equipment were not invented until the 1960’s and the 1970’s. Therefore, the Esval et al. patent not only does not disclose any computing, but could not have done so.

The Atwood et al. patent, similarly to the Esval et al. patent, relates to a pair of accelerometers measuring acceleration along an axis normal to the line joining the accelerometers to ultimately control the pitch of the aircraft. Applicant respectfully submit that the Atwood et al. patent does not teach locating any element at a “vibration antinode” or at a “vibration node.” In the Atwood et al. patent, the accelerators are located both in front of and behind the center of gravity of the aircraft, as in Fig. 1 of the the Atwood et al. patent, but

¹ See page 3, lines 8-12, regarding vibration nodes and antinodes, and page 3, lines 16-17, regarding the flight control computer responsible for the “computing.”

² See col. 4, lines 58-63, in the Esval et al. patent.

locating them at vibration antinodes is not taught. Further, the location of the gyrometer is neither taught to be at a vibration node nor even near the center of gravity (see Fig. 1).

Therefore, the prior art fails to teach or suggest every feature recited in Applicant's claims, so that Claims 1 and 4 are patentably distinct over the prior art. Accordingly, Applicant respectfully traverses, and requests reconsideration of, the 35 U.S.C. § 102(b) rejections based on the Esval et al. or Atwood et al. patents.³

In response to the rejection of Claims 5, 8, and 9 under 35 U.S.C. § 102(b), Applicant respectfully requests reconsideration of the rejection and traverses the rejection as discussed next.

The Chakravarty et al. patent is directed to an active aircraft modal suppression control system which is capable of accurately sensing modal induced oscillations and producing control signals to deploy control surfaces to suppress such accelerations. Applicant notes, however, that the Chakravarty et al. patent is limited to lateral accelerations: "The present invention is an active system for suppressing accelerations due to lateral mode excitation."⁴ Accordingly, only yaw is controlled by this system. Claim 5 has been amended to emphasize the distinction between the subject matter of Claim 5 and the Chakravarty et al. patent. More precisely, Claim 5 has been amended to recite "computing both a roll command and a yaw command based on said first and second horizontal data, on said roll rate data, and on said yaw rate data" rather than "generating at least one of a roll command and a yaw command." The Chakravarty et al. patent only teaches generating a yaw command (called the "yaw damper").⁵ This limitation is illustrated even more clearly in Chakravarty's Figs. 5 and 6 which show the inputs of the system along with its single output at the "rudder power

³ See MPEP 2131: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," (Citations omitted) (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

⁴ See Col. 2, lines 58-59, in the Chakravarty et al. patent.

⁵ See the equation at col. 5, line 20, of the Chakravarty et al. patent.

control unit" 214. The rudder 26 implements the yaw command (col. 3, lines 7-16). There are variations of the system, with varying numbers of accelerometers, but always a single output dedicated to the control of yaw. Accordingly, the Chakravarty et al. patent does not teach "computing **both** a roll command and a yaw command based on said first and second horizontal data, on said roll rate data, and on said yaw rate data."

Therefore, the prior art fails to teach or suggest every feature recited in Applicant's claims, so that Claims 5, 8, and 9 (as well as 10 which has been amended to depend from Claim 5) are patentably distinct over the prior art. Accordingly, Applicant respectfully traverses, and requests reconsideration of, the 35 U.S.C. § 102(b) rejection based on the Chakravarty et al. patent.⁶

In response to the rejections of Claims 2 and 3, Applicant respectfully submits that the signal filtering, alleged in the Office Action to be well known in control theory, does not teach the above-mentioned elements of Claim 1, which are not taught by the Esval et al. or Atwood et al. patents. Therefore, it is respectfully requested that the 35 U.S.C. § 103(a) rejection of dependent Claims 2 and 3 be withdrawn.

In response to the rejection of Claims 6 and 7, Applicant respectfully submits that the signal filtering, alleged in the Office Action to be well known in control theory, does not teach the above-mentioned elements of Claim 5, which are not taught by the Chakravarty et al. patent. Therefore, it is respectfully requested that the 35 U.S.C. § 103(a) rejection of dependent Claims 6 and 7 be withdrawn.

In order to vary the scope of protection recited in the claims, new Claims 11-20 are added. Claim 11 is similar to Claim 10, but written independently in a slightly different manner, and having an additional feature discussed in the disclosure at least at page 8, lines

⁶ See MPEP 2131: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," (Citations omitted) (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

23-25, and page 10, lines 6-8 and 13-15. Claims 12-16 pertain to the processing of roll, pitch, and yaw rate data, the vertical acceleration data, and the horizontal acceleration data of Claim 11. This processing is discussed at least at page 8, lines 5-16, and page 9, lines 7-17, of the disclosure. Claims 17-19 pertain to roll angle information discussed at least at page 9, lines 18-22, of the disclosure. Claim 20 pertains to the control surfaces discussed at least at page 7, lines 20-24, of the disclosure. Thus, new Claims 11-20 find non-limiting support in the disclosure as originally filed. Therefore, the new claims are not believed to raise a question of new matter.⁷

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-20 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

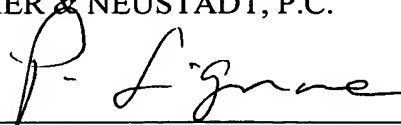
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Respectfully submitted,

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⁷ See MPEP 2163.06 stating that "information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter."